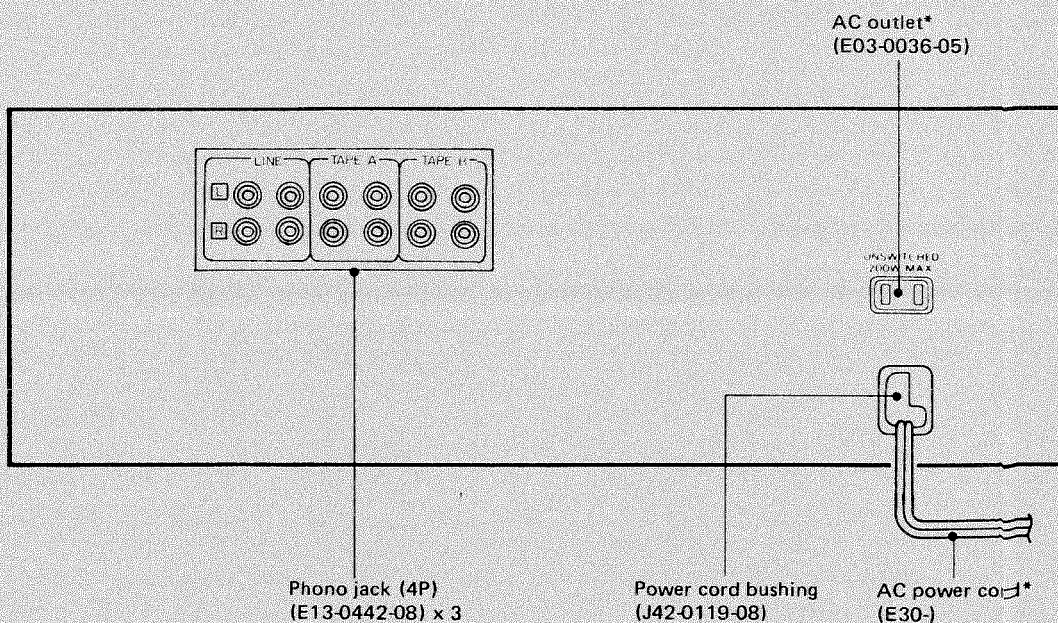
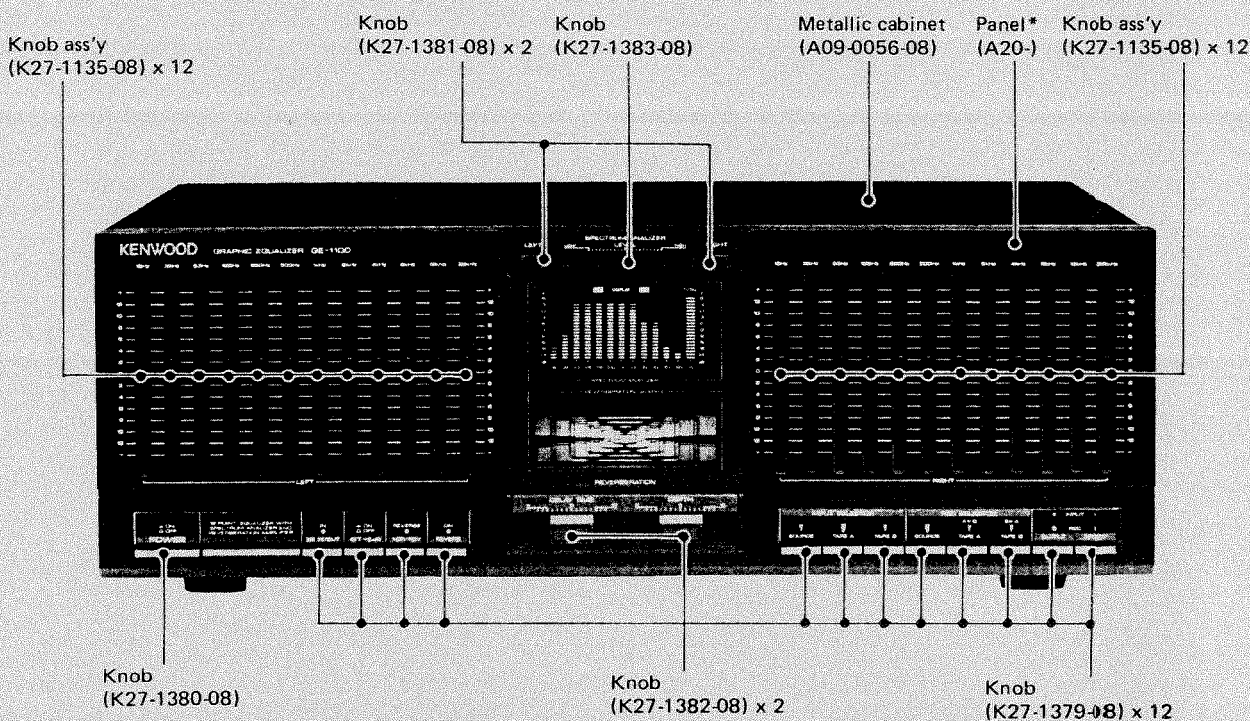


SERV.32079

# KENWOOD

# GE-1100

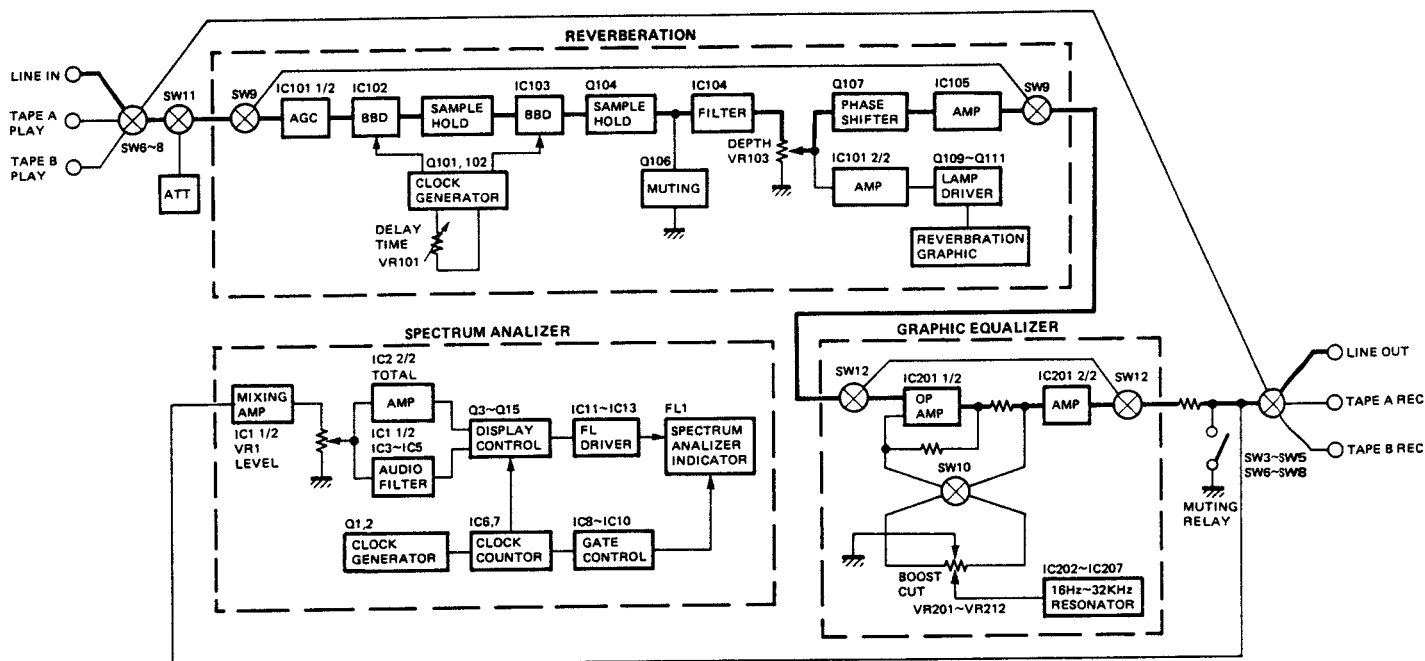
## GRAPHIC EQUALIZER



\*Refer to parts list on page 8.

# SERVICE MANUAL

## BLOCK DIAGRAM/CIRCUIT DESCRIPTION



| Name       | Function                               | Description                                                                                                              |
|------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Q1,2       | Clock generator                        |                                                                                                                          |
| Q3~15      | Spectrum analyzer display control      | Transistor switch for signal selection                                                                                   |
| Q101,102   | Clock generator                        |                                                                                                                          |
| Q103,104   | Sampling hold                          |                                                                                                                          |
| Q105       | Buffer                                 |                                                                                                                          |
| Q106       | Muting                                 |                                                                                                                          |
| Q107       | Phase shifter                          |                                                                                                                          |
| Q108       | Reverberation graphic lamp switch      |                                                                                                                          |
| Q109~111   | Reverberation graphic lamp driver      |                                                                                                                          |
| Q501~504   | AVR                                    |                                                                                                                          |
| Q505,506   | Muting relay driver                    |                                                                                                                          |
| IC1        | Mixing amp, audio filter               |                                                                                                                          |
| IC2        | Total amp                              | For spectrum analyzer total stage.                                                                                       |
| IC3~5      | Spectrum analyzer audio filter         | 16, 32, 64, 125, 250, 500, 1k, 2k, 4k, 8k, 16k and 32k filters.                                                          |
| IC6        | Clock counter (4 bit binary counter)   | Forms a scale of 13 counter together with IC7                                                                            |
| IC7        | Clock counter (4 to 16 line decoder)   | Forms a scale of 13 counter together with IC6. Output 16 signals according to scale of 13 counter output.                |
| IC8~10     | Spectrum analyzer gate control         | Controls the fluorescent display tube gates according to IC7 output.                                                     |
| IC11~13    | Spectrum analyzer FL driver            | Controls the grids of display tube according to the output level. (10 steps : -24, -18, -15, -12, -9, -6, -3, 0, 3, 6dB) |
| IC101      | AGC amplifier of reverberation graphic |                                                                                                                          |
| IC102, 103 | BBD                                    |                                                                                                                          |
| IC104      | Filter                                 |                                                                                                                          |
| IC105      | Amp                                    |                                                                                                                          |
| IC201      | OP Amp                                 |                                                                                                                          |
| IC202~206  | Frequency resonator                    | Resonating circuits for 12 frequencies between 16Hz and 32kHz.                                                           |

## CIRCUIT DESCRIPTION

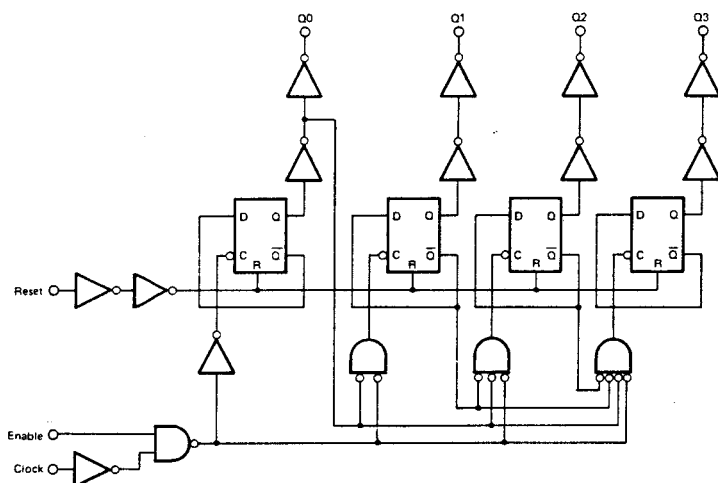
### HD14520B

The HD14520B dual binary counter is constructed with MOS P-channel and N-channel enhancement mode devices in a single monolithic structure.

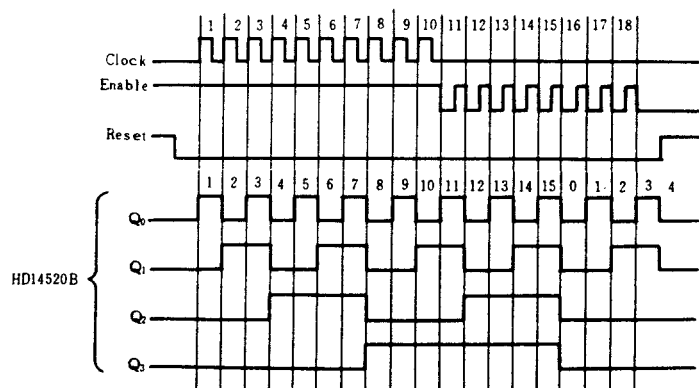
Each consists of two identical, independent, internally synchronous 4-stage counters.

The counter stages are type D flip-flops, with interchangeable clock and Enable lines for incrementing on either the positive-going or negative-going transition as required when cascading multiple stages.

Each counter can be cleared by applying a high level on the reset line.

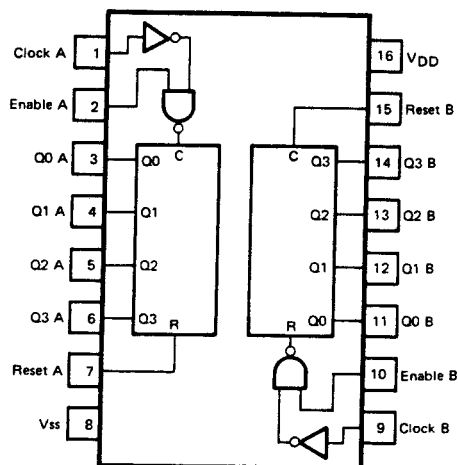


HD14520B (1/2)



Timing diagram

Pin connection



(Top View)

Truth table

| Clock | Enable | Reset | Action            |
|-------|--------|-------|-------------------|
| —     | 1      | 0     | Increment counter |
| 0     | —      | 0     | Increment counter |
| —     | X      | 0     | No change         |
| X     | —      | 0     | No change         |
| —     | 0      | 0     | No change         |
| 1     | —      | 0     | No change         |
| X     | X      | 1     | Q0~Q3 = 1         |

X : Don't care

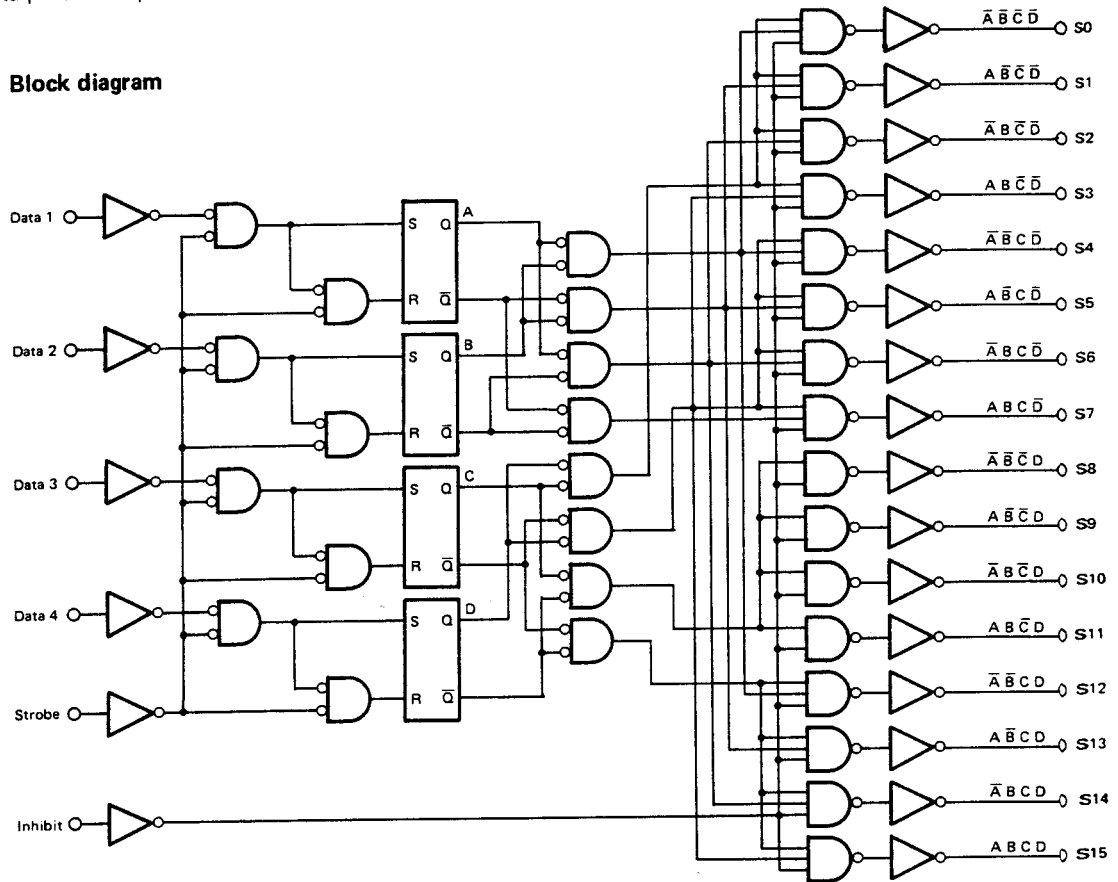
## CIRCUIT DESCRIPTION

## HD14514B

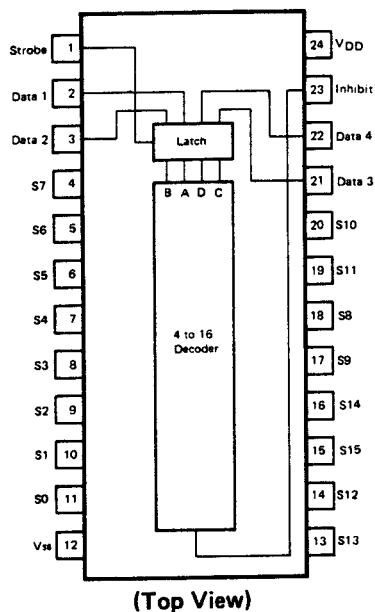
HD14514B is a 4 to 16 line decoder with latched inputs.

The HD14514B presents a logical "1" at the selected outputs, the latches are R-S type flip-flops which hold the last input data presented prior to the strobe transition from "1" to "0".

Block diagram



Pin connection



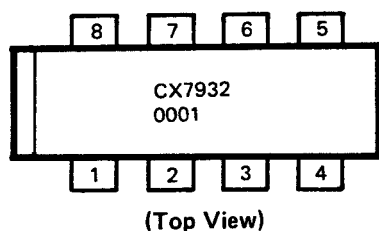
Truth table

| Inhibit | Data inputs |   |   |   | Selected output<br>(HD14514B = logic "1") |
|---------|-------------|---|---|---|-------------------------------------------|
|         | D           | C | B | A |                                           |
| 0       | 0           | 0 | 0 | 0 | S0                                        |
| 0       | 0           | 0 | 0 | 1 | S1                                        |
| 0       | 0           | 0 | 1 | 0 | S2                                        |
| 0       | 0           | 0 | 1 | 1 | S3                                        |
| 0       | 0           | 1 | 0 | 0 | S4                                        |
| 0       | 0           | 1 | 0 | 1 | S5                                        |
| 0       | 0           | 1 | 1 | 0 | S6                                        |
| 0       | 0           | 1 | 1 | 1 | S7                                        |
| 0       | 1           | 0 | 0 | 0 | S8                                        |
| 0       | 1           | 0 | 0 | 1 | S9                                        |
| 0       | 1           | 0 | 1 | 0 | S10                                       |
| 0       | 1           | 0 | 1 | 1 | S11                                       |
| 0       | 1           | 1 | 0 | 0 | S12                                       |
| 0       | 1           | 1 | 0 | 1 | S13                                       |
| 0       | 1           | 1 | 1 | 0 | S14                                       |
| 0       | 1           | 1 | 1 | 1 | S15                                       |
| 1       | X           | X | X | X | All inputs = 0                            |

X : Don't care

## CIRCUIT DESCRIPTION

### IC102,103 : CX7932 Pin connection

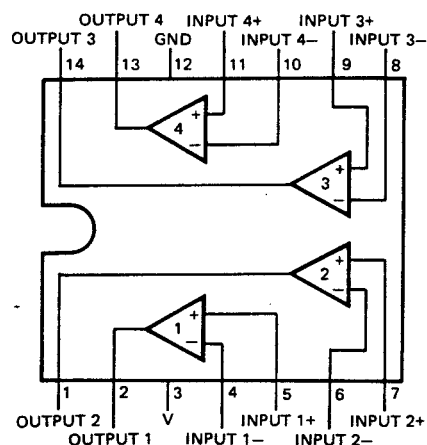


#### Terminal Function

| Terminal No. | Input/Output | Symbol   | Function                          |
|--------------|--------------|----------|-----------------------------------|
| 1            | OUT          | OUT      | Signal output terminal (512 bits) |
| 2            |              | $V_{DD}$ | Source terminal                   |
| 3            | IN           |          | Clock inter terminal 1            |
| 4            |              | $V_{DD}$ | Source terminal                   |
| 5            | IN           | $V_{in}$ | Signal input terminal             |
| 6            | IN           |          | Clock input terminal 2            |
| 7            |              |          | N.C                               |
| 8            |              | GND      | Substrate terminal                |

### IC8~13 : LM339N

#### Pin connection and Block diagram

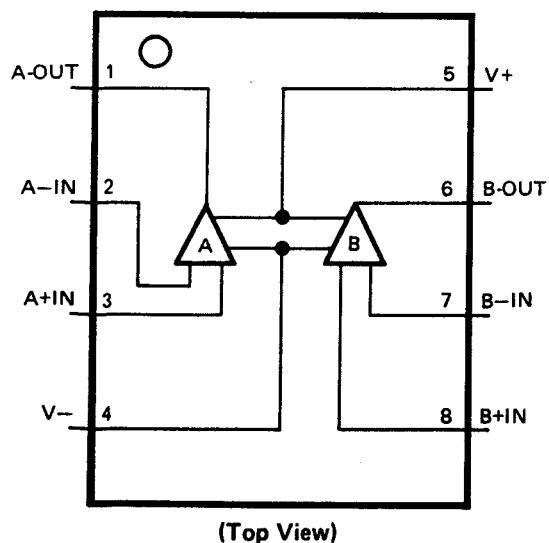


### IC1,2,101,104,105,202~205,207 : NJM4558D-X

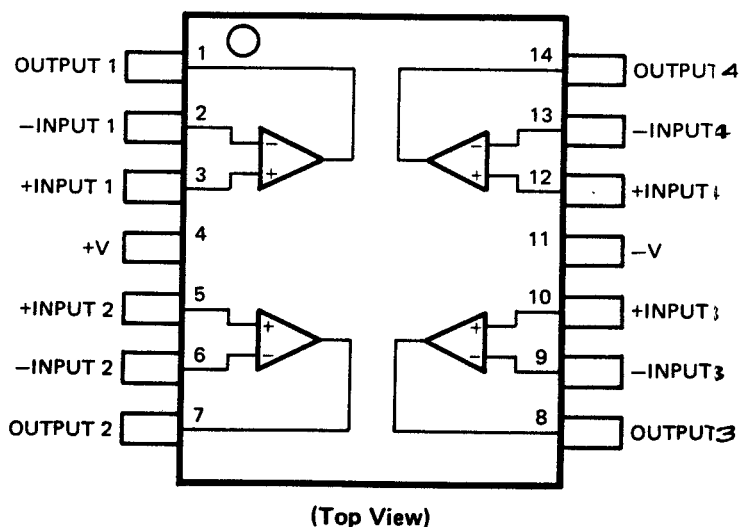
#### Pin connection and Block diagram

### IC201,206 : NJM4559D-D

#### Pin connection and Block diagram

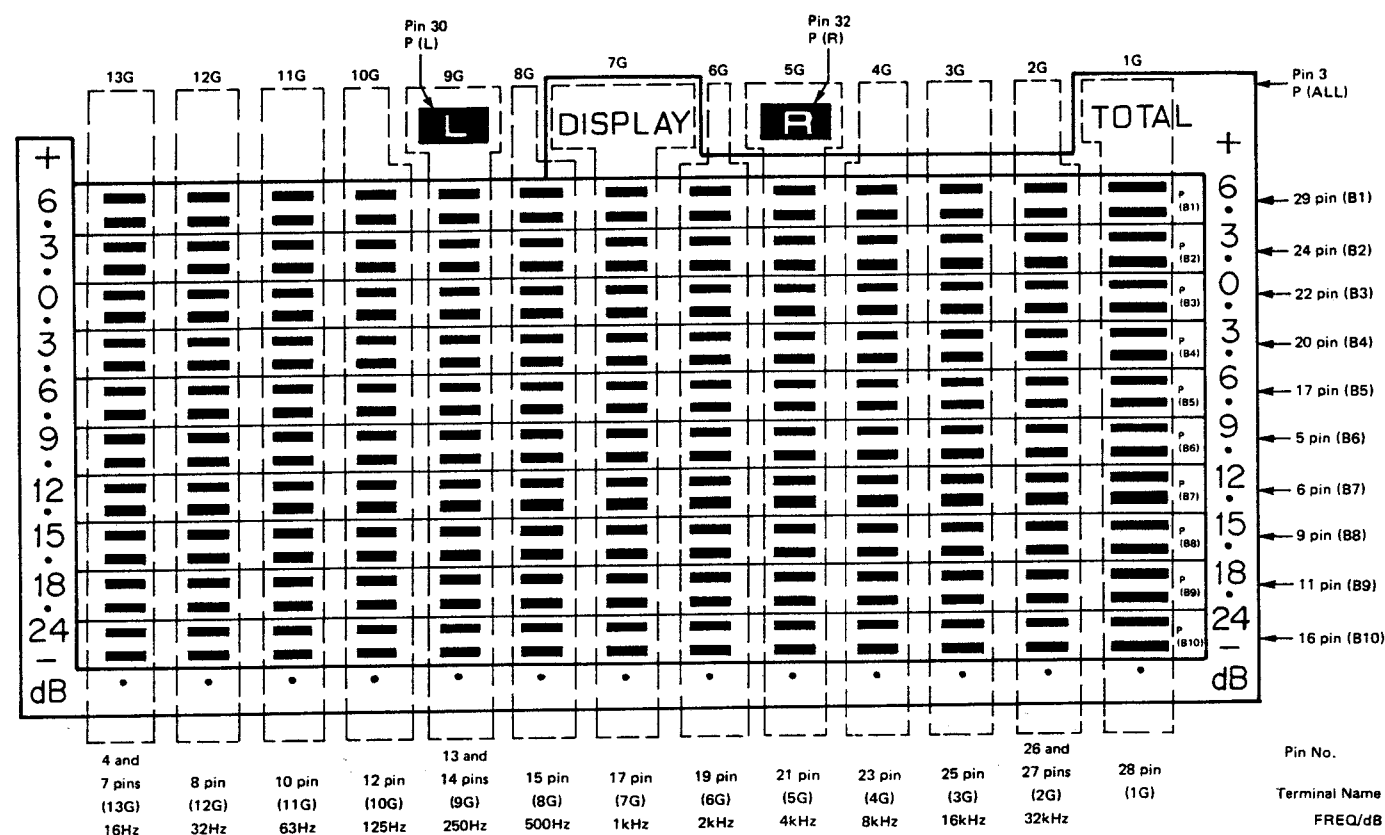


### IC3~5 : NJM2058D Pin connection and Block diagram



## CIRCUIT DESCRIPTION

SPECTRUM ANALIZER TUBE GRID PLATE DIVIDING CHART (FL1)



## ADJUSTMENT/REGLAGE/ABGLEICH

## ADJUSTMENT

| No. | ITEM               | INPUT SETTINGS                            | OUTPUT SETTINGS        | AMPLIFIER SETTINGS                                                                                     | ALIGNMENT POINTS | ALIGN FOR                                                                         | FIG. |
|-----|--------------------|-------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|------|
| 1   | REVERBERATION TIME | 400.0 Hz, 150 mV to L channel of LINE IN. | R channel of LINE OUT. | EQ: OUT<br>REVERB: ON<br>INPUT SELECTOR: SOURCE<br>REC SELECTOR: SOURCE<br>DELAY TIME: 10<br>DEPTH: 10 | VR102            | Short circuit (X) and (Y) terminals (R165) of W02-0611-08 and adjust VR102. 140mV | (a)  |

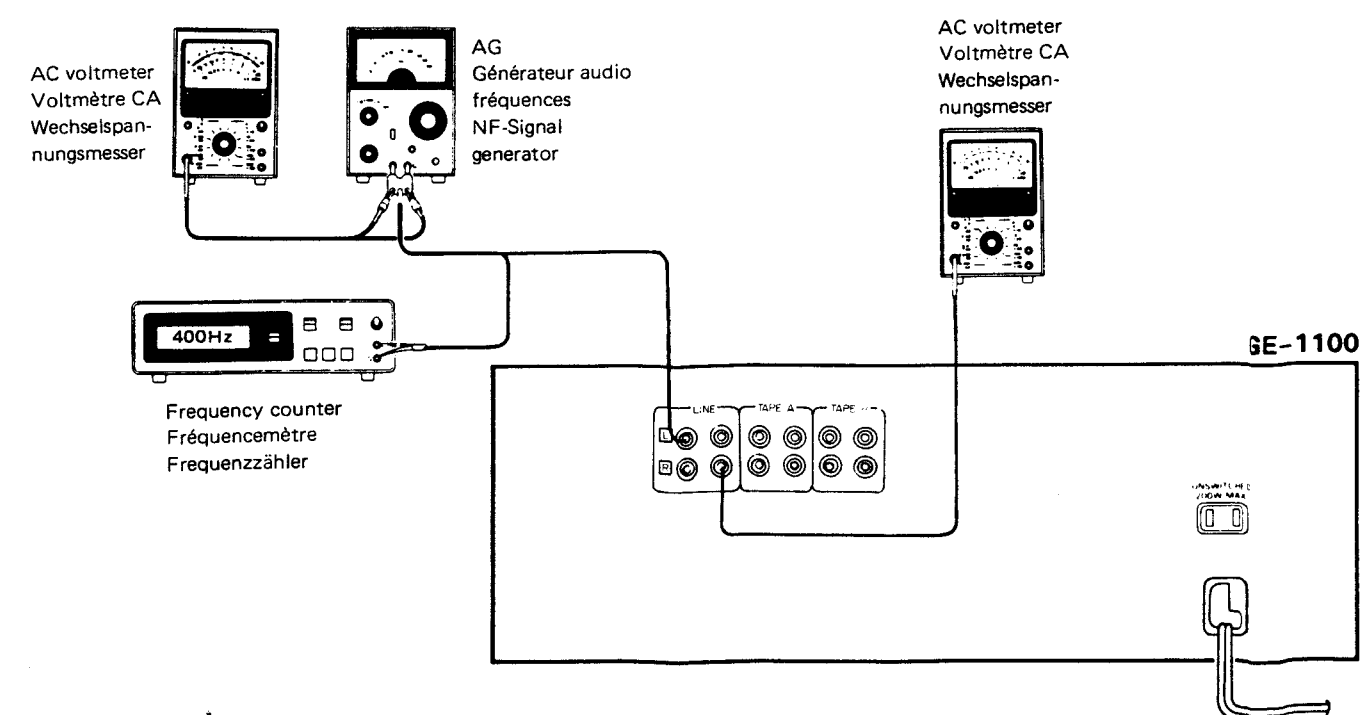
## REGLAGE

| N° | ITEM                   | REGLAGE DE L'ENTREE                                         | REGLAGE DE LA SORTIE                       | REGLAGE DE L'AMPLIFICATEUR                                                                             | POINTS DE L'ALIGNEMENT | ALIGNER POUR                                                                         | FIG. |
|----|------------------------|-------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|------|
| 1  | TEMPS DE REVERBERATION | 400,0 Hz, 150 mV au canal gauche de la prise phons LINE IN. | Le canal droit de la prise phons LINE OUT. | EQ: OUT<br>REVERB: ON<br>INPUT SELECTOR: SOURCE<br>REC SELECTOR: SOURCE<br>DELAY TIME: 10<br>DEPTH: 10 | VR102                  | Court-circuiter les bornes (X) et (Y) (R165) de W02-0611-08 et agir sur VR102. 140mV | (a)  |

## ABGLEICH

| NR. | GEGENSTAND     | EINGANGS-EINSTELLUNG                                        | AUSGANGS-EINSTELLUNG                     | AUSGANGS-EINSTELLUNG                                                                                   | ABGLEICHE PUNKTE | ABGLEICHEN FÜR                                                                              | ABB. |
|-----|----------------|-------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------|------|
| 1   | NACHHALL-DAUER | 400,0 Hz, 150 mV auf linken Kanal von Phono-Buchse LINE IN. | Rechten Kanal von Phono-Buchse LINE OUT. | EQ: OUT<br>REVERB: ON<br>INPUT SELECTOR: SOURCE<br>REC SELECTOR: SOURCE<br>DELAY TIME: 10<br>DEPTH: 10 | VR102            | Die Klemmen (X) und (Y) (R165) von W02-0611-08 kurzschließen und VR102 so einstellen. 140mV | (a)  |

## System connections



PC BOARD

EQUALIZER (W02-0612-08)

|       |   |    |
|-------|---|----|
| IC201 | 1 | 0V |
|       | 2 | 0V |
|       | 3 | 0V |
|       | 4 | —  |
|       | 5 | 0V |
|       | 6 | 0V |
|       | 7 | —  |
|       | 8 | —  |
| IC202 | 5 | 0V |
|       | 6 | 0V |

MAIN (W02-0611-08)

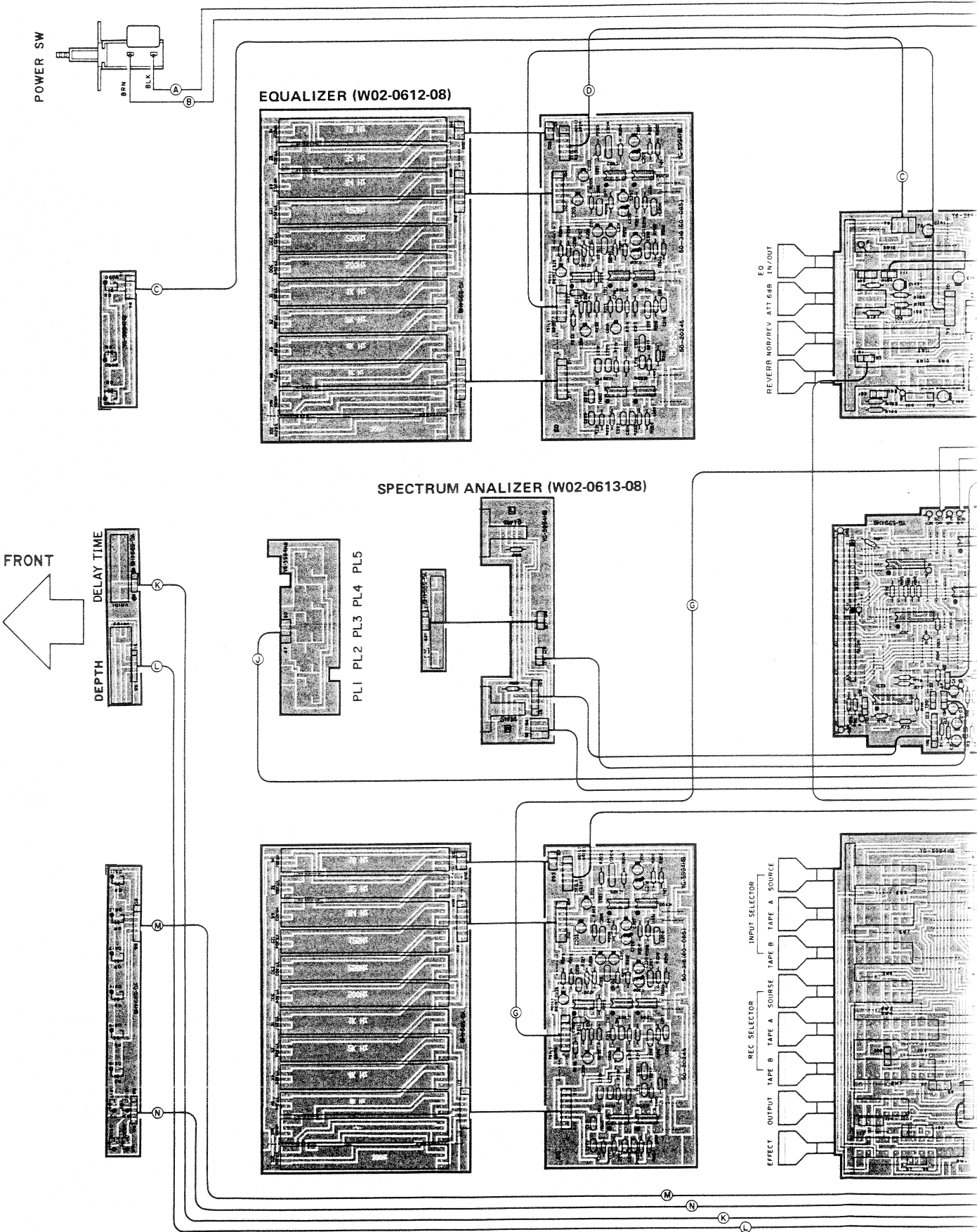
|      |    |       |
|------|----|-------|
| Q1   | E  | —     |
|      | C  | 13.5V |
|      | B  | 18.6V |
| Q2   | E  | 16.8V |
|      | C  | 13.5V |
|      | B  | 18.6V |
| Q3   | E  | 0.2V  |
|      | C  | 1V    |
|      | B  | 0.1V  |
| IC1  | 1  | 0V    |
|      | 2  | 0V    |
|      | 3  | 0V    |
|      | 4  | —     |
| IC2  | 1  | 0V    |
|      | 2  | 0V    |
|      | 3  | 0V    |
| IC5  | 1  | 0.5V  |
|      | 2  | 0.6V  |
| IC10 | 6  | 0.4V  |
|      | 4  | 3V    |
| IC11 | 6  | 1.7V  |
|      | 1  | —17V  |
| IC12 | 4  | 4.5V  |
|      | 6  | 0.08V |
|      | 8  | 0.53V |
|      | 10 | 1V    |
| IC13 | 4  | 13V   |
|      | 6  | 11.3V |
|      | 8  | 9.3V  |
|      | 10 | 6.3V  |

SPECTRUM ANALYZER (W02-0613-08)

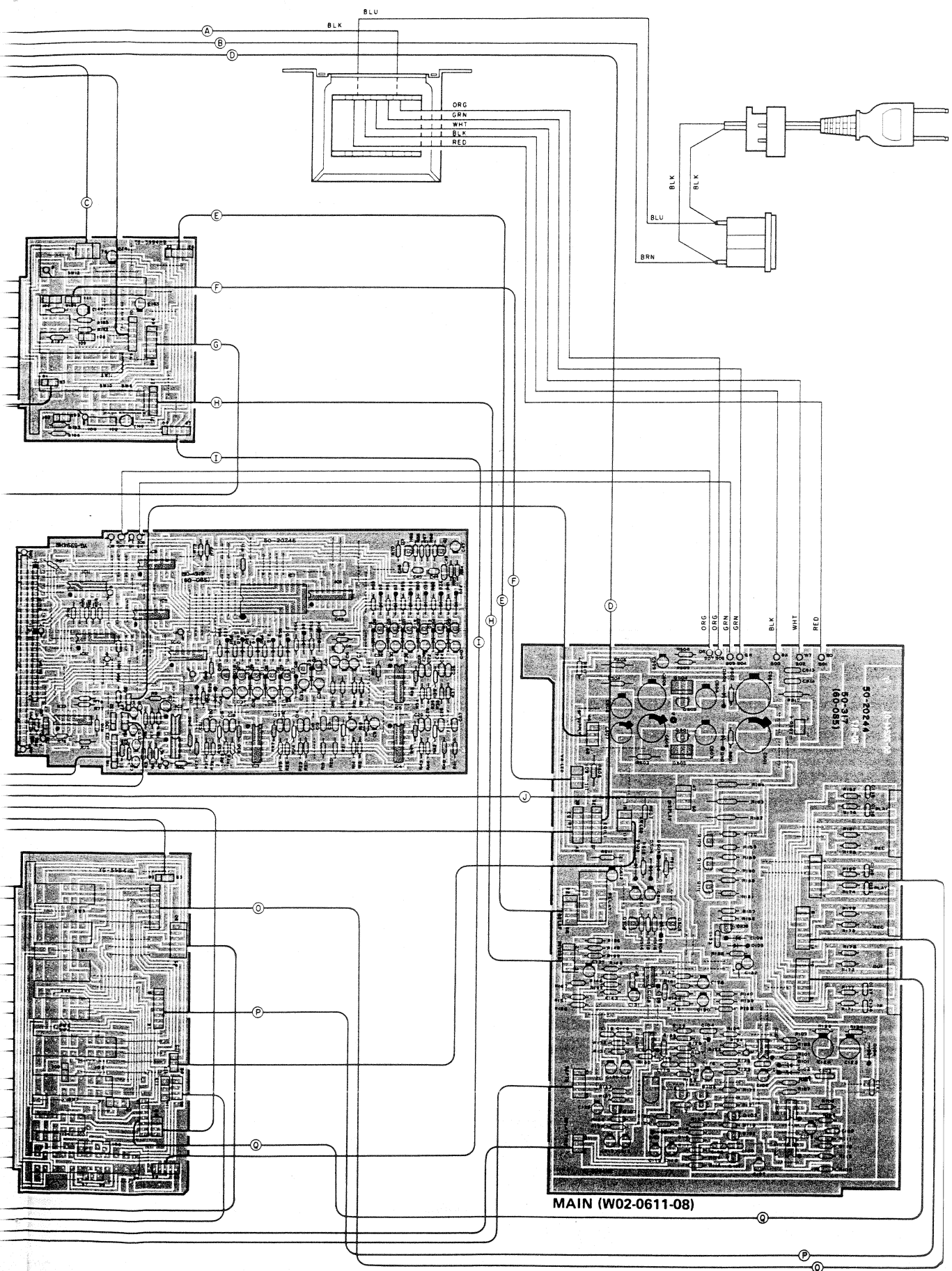
|      |   |       |
|------|---|-------|
| Q101 | E | 4.7V  |
|      | C | 1.8V  |
|      | B | —5.7V |
| Q102 | E | —     |
|      | C | —0.5V |
|      | B | —5.7V |
| Q103 | E | —     |
|      | C | —     |
|      | B | —5.2V |

|       |   |             |
|-------|---|-------------|
| Q104  | E | —           |
|       | C | —4.2V       |
|       | B | —           |
| Q105  | E | —5.9V       |
|       | C | —           |
|       | B | —           |
| Q106  | E | —           |
|       | C | —5.9V       |
|       | B | —5.9V       |
| Q108  | E | —           |
|       | C | 22V (20.6V) |
|       | B | —           |
| Q109  | E | —           |
|       | C | 22.1V       |
|       | B | —21V        |
| Q110  | E | —           |
|       | C | 22.1V       |
|       | B | —2.1V       |
| Q111  | E | —           |
|       | C | 22.1V       |
|       | B | —2.1V       |
| Q501  | E | 17.8V       |
|       | C | 22.1V       |
|       | B | 18.6V       |
| Q502  | E | —           |
|       | C | —           |
|       | B | 17.8V       |
| Q503  | E | —17.8V      |
|       | C | —22.1V      |
|       | B | —18.6V      |
| Q504  | E | —           |
|       | C | —22.1V      |
|       | B | —17.8V      |
| Q505  | E | 8.6V        |
|       | C | 3.9V        |
|       | B | 8.5V        |
| Q506  | E | 0V          |
|       | C | 0.1V        |
|       | B | —           |
| IC101 | 1 | 0V          |
|       | 2 | 0V          |
|       | 3 | 0V          |
|       | 4 | —           |
|       | 5 | 0V          |
|       | 6 | 0V          |
|       | 7 | 0V          |
|       | 8 | 0V          |
| IC102 | 1 | —0.3V       |
|       | 5 | 1.8V        |
|       | 6 | 1.8V        |
| IC103 | 1 | 1.0V        |
|       | 5 | 1.5V        |
| IC104 | 1 | —           |
|       | 2 | 0V          |
|       | 3 | 0V          |
|       | 4 | —           |

|       |   |    |
|-------|---|----|
| IC104 | 5 | 0V |
|       | 6 | 0V |
|       | 7 | 0V |
| IC105 | 1 | —  |
|       | 2 | 0V |
|       | 3 | 0V |
|       | 4 | —  |
|       | 5 | 0V |
|       | 6 | 0V |
|       | 7 | 0V |
|       | 8 | —  |

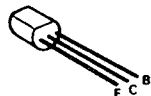


Refer to the schematic diagram for the values of resistors and capacitors.  
The PC board drawing is viewing from the side easy to check.

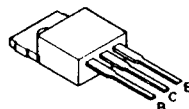


# KENWOOD

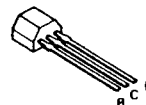
2SA1015  
2SC1815  
2SC2062B  
2SD1153



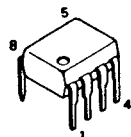
2SB703  
2SD743



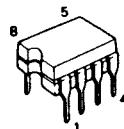
2SA1048  
2SC2458



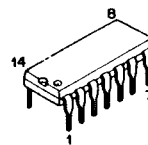
NJM4558-DX  
NJM4559D-D



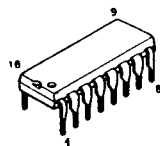
CX7932



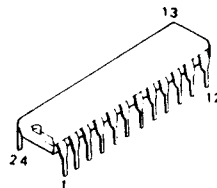
NJM2058D



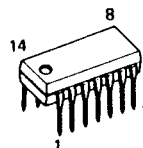
HD14520BP



HD14514BP



LM339N



Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

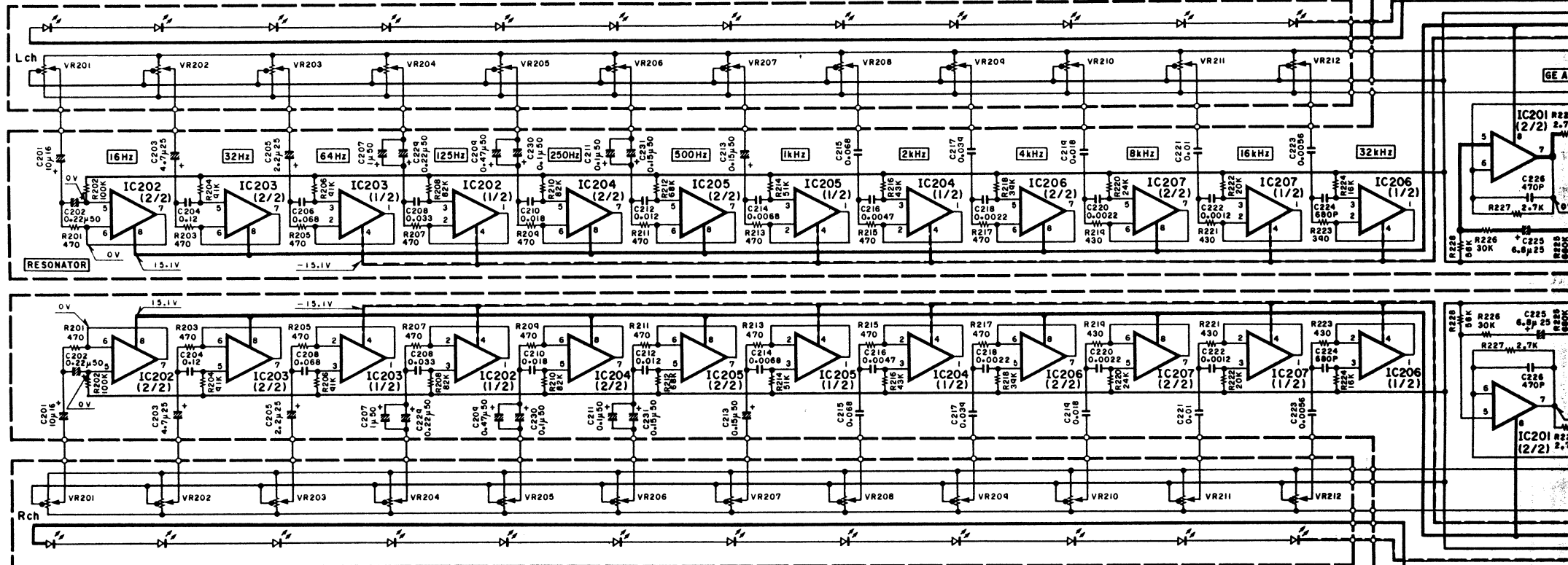
Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

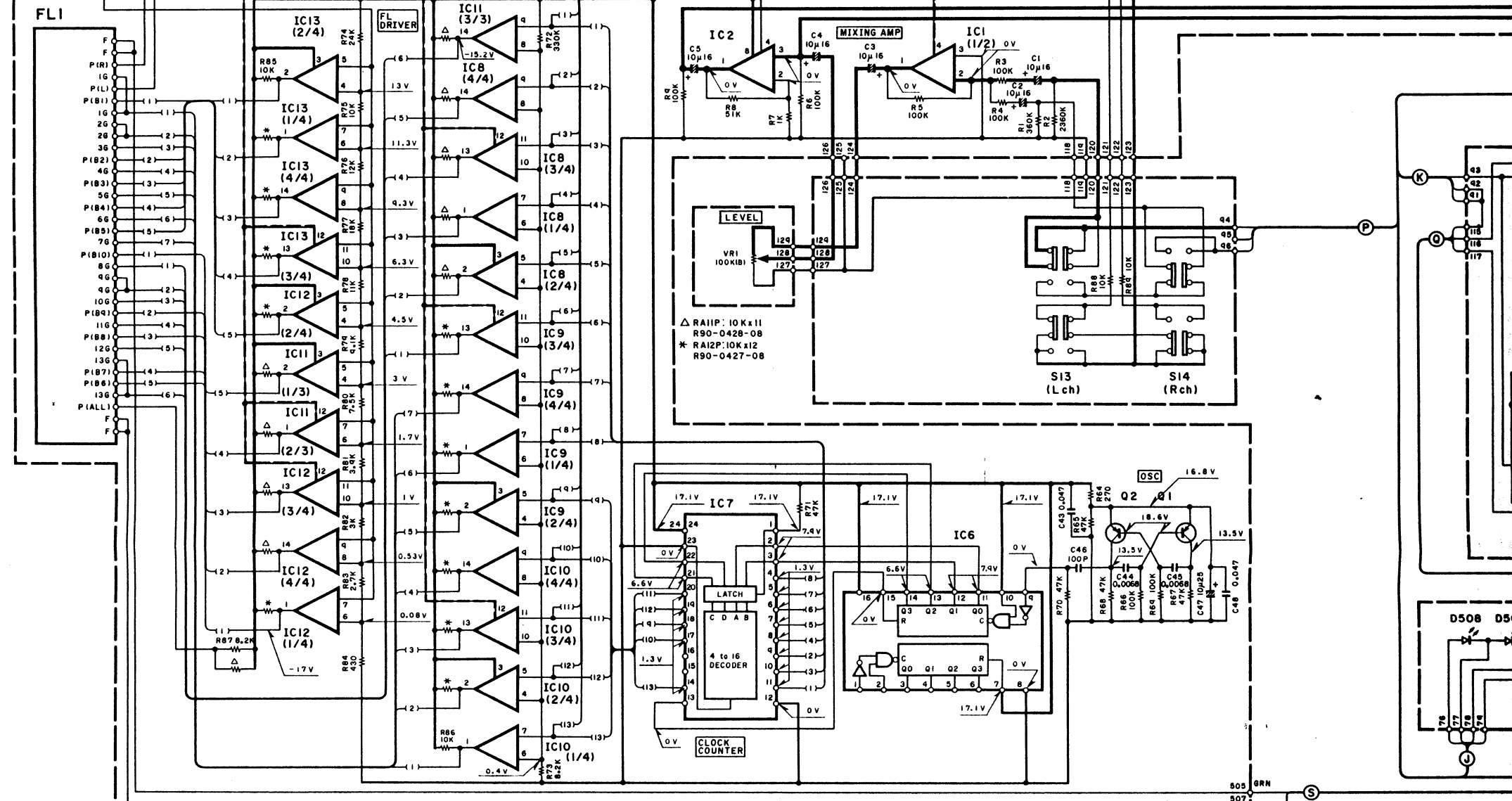
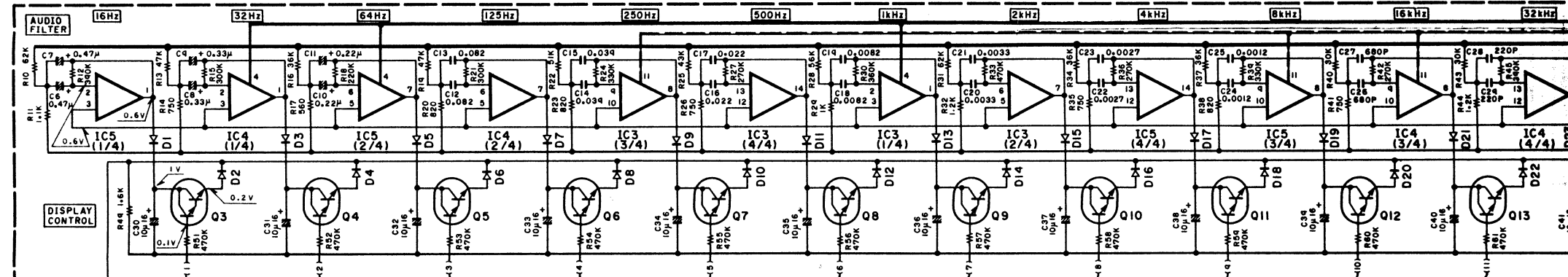
- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geraten u.U. geringfügig.

**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

# EQUALIZER



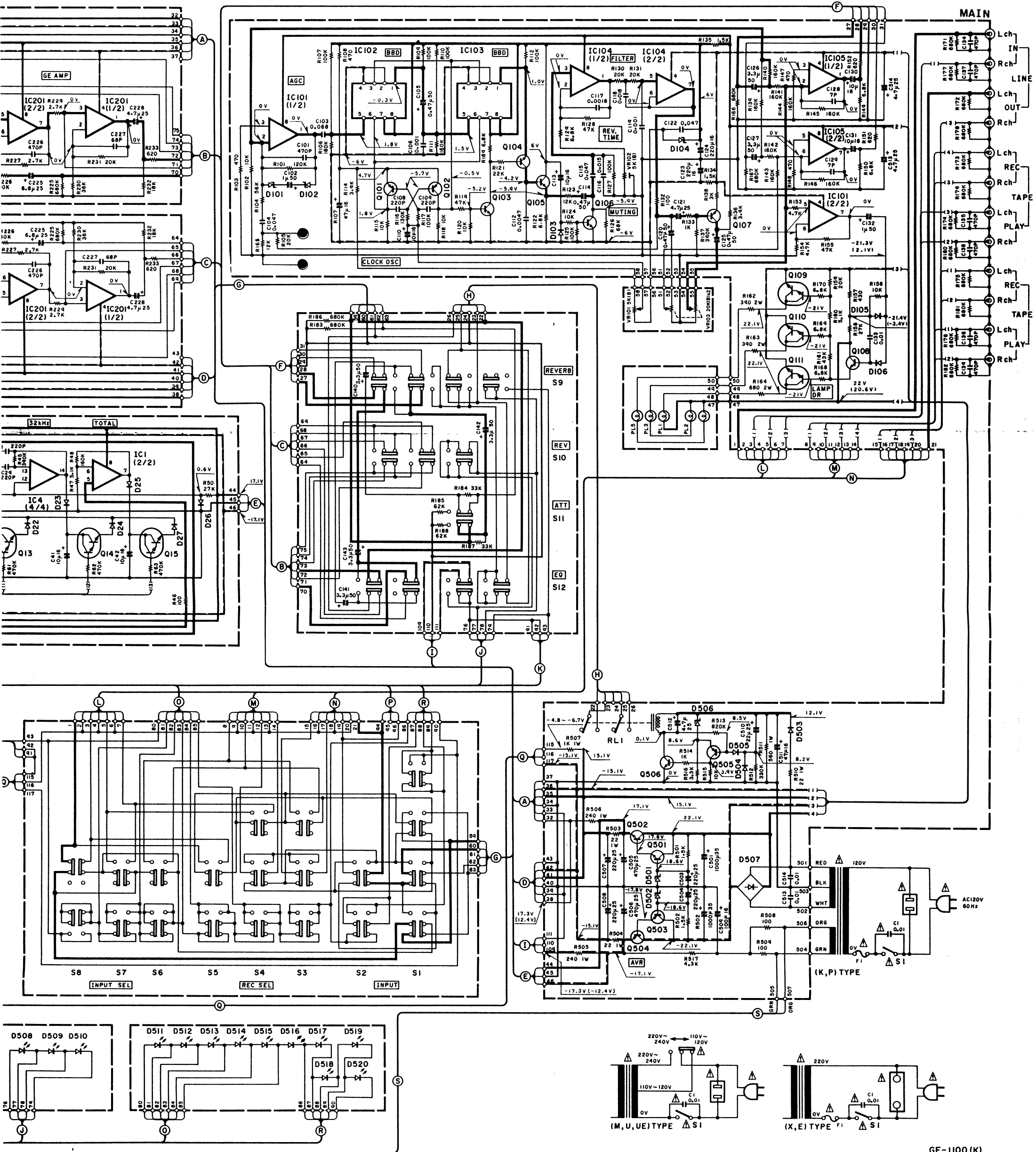
# SPECTRUM ANALYZER



IC1, 2, 101, 104, 105, 202~205, 207 : NJM4558D-X  
 IC3~5 : NJM2058D  
 IC6 : HD145208P  
 IC7 : HD145148P  
 IC8~13 : LM339N  
 IC102, 103 : CX7932  
 IC201, 206 : NJM4559D-0

Q3~15 : 2SC2062  
 Q101, 102 : 2SA1048  
 Q103~108 : 2SC2458  
 Q109~111 : 2SD1153  
 Q501, 506 : 2SC1815  
 Q502 : 2SD743  
 Q503, 505 : 2SA1015  
 Q504 : 2SB703

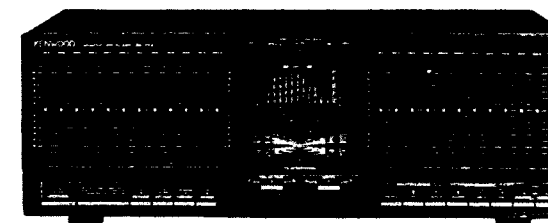
D1~27, 103, 105, 106, 504, 505 : 1S1588  
 D101, 102 : HZ3A-1  
 D104 : HZ12A-2  
 D501, 502 : HZ18-3  
 D503 : 1N4002  
 D506 : HZ3C-1



GE-1100(K)

# GRAPHIC EQUALIZER

# GE-1100



## SPECIFICATIONS

### [Equalizer Section]

#### Equalizer Characteristics

|                                     |                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------|
| Variable Range .....                | ± 12 dB                                                                                      |
| Individual Channel Adjust .....     | 16 Hz, 32 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz,<br>4 kHz, 8 kHz, 16 kHz, 32 kHz   |
| Total Harmonic Distortion .....     | All controls defeated<br>0.005% (1 V output at 20 Hz-20 kHz)<br>0.003% (1 V output at 1 kHz) |
| Maximum Output Voltage .....        | 9 V at 1 kHz, 0.01% THD                                                                      |
| Frequency Response .....            | 10 Hz to 50 kHz, +0 dB, -1.0 dB                                                              |
| Signal to Noise Ratio (IHF-A) ..... | 105 dB at 1 V                                                                                |

### [Spectrum Analyzer Section]

|                                  |                                                |
|----------------------------------|------------------------------------------------|
| Input Impedance .....            | 50 kohms                                       |
| Output Impedance .....           | 600 ohms                                       |
| Signal Level (Volume Max.) ..... | Both Channel Driven.....140 mV at 0 dB (Total) |

### [Reverberation Amplifier Section]

|                          |                                   |
|--------------------------|-----------------------------------|
| Delay Time .....         | Variable from 30 msec to 100 msec |
| Reverberation Time ..... | Variable from 0 sec to 3 sec      |

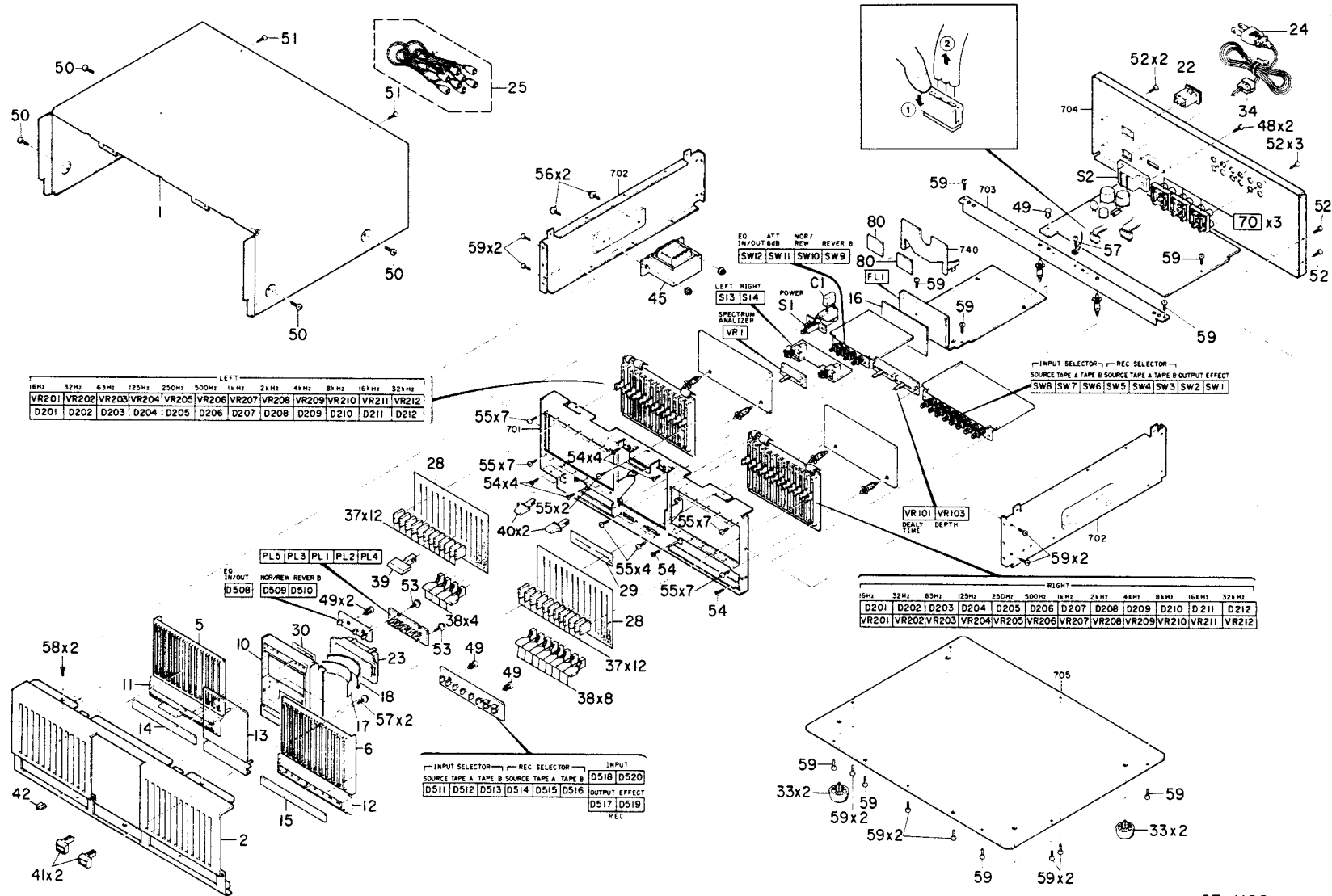
### [General]

|                          |                                                                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Requirements ..... | AC 120 V, 60 Hz: U.S.A. models<br>AC 240 V, 50/60 Hz: U.K. models<br>AC 240 V, 50 Hz: Australia models<br>AC 220-240 V, 50 Hz: Europe models<br>AC 110-120 V/220-240 V (Switchable), 50/60 Hz: Ot<br>countries |
| Power Consumption .....  | 0.28 A (UL: U.S.A. models)<br>30 watts (Other countries)                                                                                                                                                       |
| AC Outlet .....          | Unswitched x 1                                                                                                                                                                                                 |
| Dimensions .....         | W 440 mm (17-5/16")<br>H 163 mm (6-7/16")<br>D 350 mm (13-3/4")                                                                                                                                                |
| Weight (Net) .....       | 6.2 kg (13.6 lb)                                                                                                                                                                                               |

**Parts with the exploded numbers larger than 700 are not supplied.**

# GE-1100

**EXPLODED VIEW**



GE-1100

# GE-1100 GE-1100

## PARTS LIST

\* New Parts  
Parts without Parts No. are not supplied.  
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| <b>GE-1100</b> |         |           |             |                             |                            |
| 1              | 1A      | *         | A09-0056-08 | METALLIC CABINET            | KMUUE<br>EX<br>T           |
| 2              | 2A      | *         | A20-4170-08 | PANEL                       |                            |
| 2              | 2A      | *         | A20-4170-08 | PANEL                       |                            |
| 2              | 2A      | *         | A20-4174-08 | PANEL                       |                            |
| 5              | 2A      | *         | A29-0052-08 | GUIDE PANEL(L)              |                            |
| 6              | 2A      | *         | A29-0053-08 | GUIDE PANEL(R)              |                            |
| 10             | 2A      | *         | B07-1362-08 | ESCUTCHEON (FRONT)          |                            |
| 11             | 2A      | *         | B07-1363-08 | ESCUTCHEON (L)              |                            |
| 12             | 2A      | *         | B07-1364-08 | ESCUTCHEON (R)              |                            |
| 13             | 2A      | *         | B11-0074-08 | FILTER (FRONT)              |                            |
| 14             | 2A      | *         | B11-0075-08 | FILTER (L)                  |                            |
| 15             | 2A      | *         | B11-0076-08 | FILTER (R)                  |                            |
| 16             | 1B      | *         | B11-0077-08 | FILTER (CBLR)               |                            |
| 17             | 2A      | *         | B11-0078-08 | FILTER (DISPLAY A)          |                            |
| 18             | 2A      | *         | B11-0079-08 | FILTER (DISPLAY B)          |                            |
| -              |         |           | B46-0092-03 | WARRANTY CARD               | K                          |
| -              |         |           | B46-0094-03 | WARRANTY CARD               | UUE                        |
| -              |         |           | B46-0095-03 | WARRANTY CARD               | UUE                        |
| -              |         |           | B46-0096-03 | WARRANTY CARD               | X                          |
| -              |         |           | B46-0097-03 | WARRANTY CARD               | T                          |
| -              |         |           | B46-0098-03 | WARRANTY CARD               | E                          |
| -              |         | *         | B50-5346-00 | INSTRUCTION MANUAL(ENGLISH) | KUMUE                      |
| -              |         | *         | B50-5346-00 | INSTRUCTION MANUAL(ENGLISH) | XE                         |
| -              |         | *         | B50-5347-00 | INSTRUCTION MANUAL(FRENCH)  | MXE                        |
| -              |         | *         | B50-5348-00 | INSTRUCTION MANUAL(SPANISH) | M                          |
| -              |         | *         | B50-5349-00 | INSTRUCTION MANUAL(ARABIC)  | M                          |
| -              |         | *         | B50-5350-00 | INSTRUCTION MANUAL(G.D.I)   | E                          |
| -              |         | *         | B50-5351-00 | INSTRUCTION MANUAL(ENGLISH) | T                          |
| -              |         |           | B58-0222-14 | CAUTION CARD(PRESET 220V)   | UUE                        |
| -              |         |           | B58-0223-04 | CAUTION CARD(PRESET 120V)   | U                          |
| -              |         |           | B58-0245-23 | CAUTION CARD(FTZ)           | E                          |
| -              |         |           | B58-0269-04 | CAUTION CARD                | K                          |
| -              |         |           | B59-0092-00 | SUB-INSTRUCTION MANUAL      | UUE                        |
| Δ C1           | 1B      |           | CK45E2H103P | CERAMIC 0.01UF P            |                            |
| Δ 22           | 1C      | *         | E03-0036-05 | AC OUTLET                   | KMUUE                      |
| Δ 23           | 2A      | *         | E15-0059-08 | LAMP CASE                   |                            |
| Δ 24           | 1C      |           | E30-0651-08 | AC POWER CORD               | E                          |
| Δ 24           | 1C      |           | E30-0658-08 | AC POWER CORD               | UUE                        |
| Δ 24           | 1C      |           | E30-0659-08 | AC POWER CORD               | K                          |
| Δ 24           | 1C      |           | E30-0660-08 | AC POWER CORD               | T                          |
| Δ 24           | 1C      |           | E30-0661-08 | AC POWER CORD               | X                          |
| 25             | 1B      | *         | E30-0942-08 | AUDIO CORD ASSY             |                            |
| 28             | 2B      | *         | F15-0260-08 | SHADE(A)                    |                            |
| 29             | 2B      | *         | F15-0261-08 | SHADE(B)                    |                            |
| 30             | 2A      | *         | F15-0262-08 | SHADE(C)                    |                            |
| -              |         | *         | H01-5296-08 | ITEM CARTON BOX             |                            |
| -              |         | *         | H10-1761-08 | POLYSTYRENE FOAMED FIXTURE  |                            |
| -              |         | *         | H25-0078-04 | PROTECTION BAG(235X315)     | UUE                        |
| -              |         | *         | H25-0077-08 | PROTECTION BAG(650X600)     |                            |
| 33             | 2B,2C   | *         | J02-0160-08 | FOOT                        |                            |

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| Δ 34                      | 1C      | *         | J42-0119-08 | POWER CORD BUSHING              |                            |
| 37                        | 2A,2B   | *         | K27-1135-08 | KNOB ASSY (GE FREQ)             |                            |
| 38                        | 2B      | *         | K27-1379-08 | KNOB(BUTTON) (SELECTOR)         |                            |
| 39                        | 2A      | *         | K27-1380-08 | KNOB(BUTTON) (POWER)            |                            |
| 40                        | 2B      | *         | K27-1381-08 | KNOB(BUTTON) (LEFT,RIGHT)       |                            |
| 41                        | 2A      | *         | K27-1382-08 | KNOB(BUTTON) (DELAY TIME,DEPTH) |                            |
| 42                        | 2A      | *         | K27-1383-08 | KNOB(BUTTON) (LEVEL)            |                            |
| Δ 45                      | 1B      | *         | L01-3861-08 | POWER TRANSFORMER               | K                          |
| Δ 45                      | 1B      | *         | L01-3862-08 | POWER TRANSFORMER               | EX                         |
| Δ 45                      | 1B      | *         | L01-3864-08 | POWER TRANSFORMER               | UUE                        |
| Δ 45                      | 1B      | *         | L01-3867-08 | POWER TRANSFORMER               | T                          |
| 48                        | 1C      | *         | N09-1346-08 | SCREW(Ø2.6XB)                   | UUE                        |
| 49                        | 1C,2B   | *         | N29-0083-08 | PUSH RIVET                      |                            |
| 50                        | 1A      | *         | N09-1419-08 | SCREW(Ø4XB,BI-S TITE)BLK        |                            |
| 51                        | 1A      | *         | N09-1420-08 | SCREW(Ø3XB,BI-TP)BLK            |                            |
| 52                        | 1C      | *         | N09-1421-08 | SCREW(Ø3XB,PAN-TP)BLK           |                            |
| 53                        | 2A,2B   | *         | N09-1422-08 | SCREW(Ø2.6XB,PAN-TP)            |                            |
| 54                        | 2B      | *         | N09-1423-08 | SCREW(M3X6,FLAT)                |                            |
| 55                        | 1B,2B   | *         | N09-1424-08 | SCREW(M2X3,PAN)                 |                            |
| 56                        | 1B      | *         | N09-1425-08 | SCREW(M3XB,FLANGE)              |                            |
| 57                        | 2A      | *         | N09-1426-08 | SCREW(Ø3XB,FLANGE-TP)BLK        |                            |
| 58                        | 2A      | *         | N09-1427-08 | SCREW(Ø3XB,FLAT-TP)             |                            |
| 59                        | 1C,2C   | *         | N09-1428-08 | SCREW(Ø3XB,PAN-TP)              |                            |
| Δ S1                      | 1B      | *         | S40-2334-08 | PUSH SWITCH(POWER)              | UUE                        |
| Δ S2                      | 1C      | *         | S31-2087-08 | SLIDE SWITCH                    |                            |
| <b>MAIN (W02-0611-08)</b> |         |           |             |                                 |                            |
| D508-510                  | 2A      | *         | B30-1059-08 | LED(EO I/O,NOR/REV,REVERB)      |                            |
| D511-513                  | 2B      | *         | B30-1060-08 | LED(INPUT SELECTOR)             |                            |
| D514-517                  | 2B      | *         | B30-1059-08 | LED(REC SELECTOR,OUTPUT REC)    |                            |
| D518                      | 2B      | *         | B30-1060-08 | LED(OUTPUT INPUT)               |                            |
| D519                      | 2B      | *         | B30-1059-08 | LED(EFFECT REC)                 |                            |
| D520                      | 2B      | *         | B30-1060-08 | LED(EFFECT INPUT)               |                            |
| PL1 -5                    | 2A      | *         | B30-1058-08 | LAMP (REVERBERATION)            |                            |
| C101                      |         | *         | C91-0771-08 | POLYPRØ 470PF                   | K                          |
| C102                      |         |           | CE04W1H10M  | ELECTRØ 1.0UF                   | 50WV                       |
| C103                      |         |           | CØ92M1H683J | MYLAR 0.068UF                   | J                          |
| C104                      |         |           | CØ92M1H473J | MYLAR 0.047UF                   | J                          |
| C105                      |         |           | CE04W1HR47M | ELECTRØ 0.47UF                  | 50WV                       |
| C106                      |         |           | CØ92M1H102J | MYLAR 1000PF                    | J                          |
| C107                      |         |           | CE04W1C470M | ELECTRØ 47UF                    | 16WV                       |
| C108,109                  |         |           | CK45B1H221K | CERAMIC 220PF                   | K                          |
| C110                      |         |           | CE04W1C100M | ELECTRØ 10UF                    | 16WV                       |
| C112                      |         |           | CØ92M1H472J | MYLAR 4700PF                    | J                          |
| C113                      |         |           | CE04W1C100M | ELECTRØ 10UF                    | 16WV                       |
| C114                      |         |           | CE04W1HR47M | ELECTRØ 0.47UF                  | 50WV                       |
| C115                      |         |           | CØ92M1H473J | MYLAR 0.047UF                   | J                          |
| C116                      |         |           | CØ92M1H153J | MYLAR 0.015UF                   | J                          |
| C117                      |         |           | CØ92M1H182J | MYLAR 1800PF                    | J                          |
| C118                      |         |           | CØ92M1H183J | MYLAR 0.018UF                   | J                          |
| C119                      |         |           | CØ92M1H102J | MYLAR 1000PF                    | J                          |
| C120                      |         |           | CE04W1HR47M | ELECTRØ 0.47UF                  | 50WV                       |
| C121                      |         |           | CE04W1E47M  | ELECTRØ 4.7UF                   | 25WV                       |

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|---------------------------------------------------------------|---------------|-------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| C122<br>C123, 124<br>C125<br>C126, 127<br>C128, 129           |               |                   | CK45F1H473K<br>CE04W1C221M<br>CE04W1HR47M<br>CE04W1H3R3M<br>CC45SL1H7R0J     | CERAMIC 0.047UF K<br>ELECTR0 220UF 16WV<br>ELECTR0 0.47UF 50WV<br>ELECTR0 3.3UF 50WV<br>CERAMIC 7.0PF J            |                        |                    |
| C130, 131<br>C132<br>C133<br>C134-139<br>C140-143             |               | *                 | CE04W1C100M<br>CE04W1H1R0M<br>CQ92M1H103J<br>C91-0771-08<br>CE04W1H3R3M      | ELECTR0 10UF 16WV<br>ELECTR0 1.0UF 50WV<br>MYLAR 0.010UF J<br>POLYPR0 470PF K<br>ELECTR0 3.3UF 50WV                |                        |                    |
| C501, 502<br>C503, 504<br>C505, 506<br>C507, 508<br>C509      |               |                   | CE04W1V102M<br>CE04W1E221M<br>CE04W1E471M<br>CE04W1E221M<br>CE04W1C101M      | ELECTR0 1000UF 35WV<br>ELECTR0 220UF 25WV<br>ELECTR0 470UF 25WV<br>ELECTR0 220UF 25WV<br>ELECTR0 100UF 16WV        |                        |                    |
| C510<br>C511<br>C512-514<br>C513, 514                         |               |                   | CE04W1E220M<br>CE04W1C470M<br>CE04W1E4R7M<br>CQ92M1H103J                     | ELECTR0 22UF 25WV<br>ELECTR0 47UF 16WV<br>ELECTR0 4.7UF 25WV<br>MYLAR 0.010UF J                                    |                        |                    |
| 70                                                            | 1C            | *                 | E13-0442-08                                                                  | PHONE JACK (4P)                                                                                                    |                        |                    |
| R162<br>R163, 164<br>R503, 504<br>R505, 506<br>R507           |               |                   | RS14GB3D681J<br>RS14GB3D391J<br>RS14GB3A220J<br>RS14GB3A241J<br>RS14GB3A102J | FL-PR00F RS 680 J 2W<br>FL-PR00F RS 390 J 2W<br>FL-PR00F RS 22 J 1W<br>FL-PR00F RS 240 J 1W<br>FL-PR00F RS 1K J 1W |                        |                    |
| R510<br>R511<br>VR101<br>VR102<br>VR103                       |               |                   | RS14GB3A220J<br>RS14GB3A561J                                                 | FL-PR00F RS 22 J 1W<br>FL-PR00F RS 560 J 1W                                                                        |                        |                    |
|                                                               | 2C            | *                 | R13-2004-08                                                                  | POTENTIOMETER (5KB) DELAY TIME                                                                                     |                        |                    |
|                                                               |               | *                 | R13-2005-08                                                                  | TRIMMING P0T (5K) DELAY TIME                                                                                       |                        |                    |
|                                                               | 2C            | *                 | R13-3020-08                                                                  | POTENTIOMETER (20KBX2) DEPTH                                                                                       |                        |                    |
| RL1<br>SW1 -8<br>SW9 -12                                      |               |                   | S51-2076-08<br>S40-8007-08<br>S40-4058-08                                    | RELAY<br>PUSH SW (8KEY) SELECTOR (RIGHT)<br>PUSH SW (4KEY) SELECTOR (LEFT)                                         |                        |                    |
|                                                               | 1C<br>1B      | *                 |                                                                              |                                                                                                                    |                        |                    |
| D101, 102<br>D103<br>D104<br>D105, 106<br>D501, 502           |               |                   | HZ3A-1<br>1S1588<br>HZ12A-2<br>1S1588<br>HZ18-3                              | ZENER DIODE<br>DIODE<br>ZENER DIODE<br>DIODE<br>ZENER DIODE                                                        |                        |                    |
| D503<br>D504, 505<br>D506<br>D507<br>IC101                    |               |                   | 1N4002<br>1S1588<br>HZ3C-1<br>DF02M<br>NJM4558-DX                            | DIODE<br>DIODE<br>ZENER DIODE<br>DIODE<br>IC 0P AMP                                                                |                        |                    |
| IC102, 103<br>IC104, 105<br>Q101, 102<br>Q103-108<br>Q109-111 |               | *                 | CX7932<br>NJM4558-DX<br>2SA1048 (GR)<br>2SC2458 (GR)<br>2SD1153              | IC BBD<br>IC 0P AMP<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR                                                      |                        |                    |
| Q501<br>Q502<br>Q503<br>Q504<br>Q505                          |               | *                 | 2SC1815 (GR)<br>2SD743 (R)<br>2SA1015 (GR)<br>2SB703 (R)<br>2SA1015 (GR)     | TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR                                                 |                        |                    |

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|-----------------------------------------------------|---------------|-------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| Q506                                                |               |                   | 2SC1815 (GR)                                                             | TRANSISTOR                                                                                                |                        |                    |
| EQUALIZER (W02-0612-08)                             |               |                   |                                                                          |                                                                                                           |                        |                    |
| D201-212                                            | 1A, 2C        | *                 | B30-1061-08                                                              | LED (INCLUDED IN EQ VR)                                                                                   |                        |                    |
| C201<br>C202<br>C203<br>C204<br>C205                |               |                   | CE04W1E100M<br>CE04W1HR15M<br>CE04W1E4R7M<br>CQ92M1H124K<br>CE04W1H2R2M  | ELECTR0 10UF 25WV<br>ELECTR0 0.15UF 50WV<br>ELECTR0 4.7UF 25WV<br>MYLAR 0.12UF K<br>ELECTR0 2.2UF 50WV    |                        |                    |
| C206<br>C207<br>C208<br>C209<br>C210                |               |                   | CQ92M1H683K<br>CE04W1HR47M<br>CQ92M1H333K<br>CE04W1HR22M<br>CQ92M1H183K  | MYLAR 0.068UF K<br>ELECTR0 0.47UF 50WV<br>MYLAR 0.033UF K<br>ELECTR0 0.22UF 50WV<br>MYLAR 0.018UF K       |                        |                    |
| C211<br>C212<br>C213<br>C214<br>C215                |               |                   | CE04W1HR12M<br>CQ92M1H123K<br>CE04W1HR1M<br>CQ92M1H682K<br>CQ92M1H683K   | ELECTR0 0.12UF 50WV<br>MYLAR 0.012UF K<br>ELECTR0 0.1UF 50WV<br>MYLAR 0.0068UF K<br>MYLAR 0.068UF K       |                        |                    |
| C216<br>C217<br>C218<br>C219<br>C220                |               |                   | CQ92M1H472K<br>CQ92M1H393K<br>CQ92M1H222K<br>CQ92M1H183K<br>CQ92M1H222K  | MYLAR 0.0047UF K<br>MYLAR 0.039UF K<br>MYLAR 0.0022UF K<br>MYLAR 0.018UF K<br>MYLAR 0.0022UF K            |                        |                    |
| C221<br>C222<br>C223<br>C224<br>C225                |               |                   | CQ92M1H103K<br>CQ92M1H122K<br>CQ92M1H562K<br>CQ92M1H681K<br>CE04W1E68M   | MYLAR 0.01UF K<br>MYLAR 1200PF K<br>MYLAR 5600PF K<br>MYLAR 6800PF K<br>ELECTR0 6.8UF 25WV                |                        |                    |
| C226<br>C227<br>C228<br>C229<br>C230                |               |                   | CQ92M1H471K<br>CC45SL1H680K<br>CE04W1E4R7M<br>CE04W1HR15M<br>CE04W1HR12M | MYLAR 470PF K<br>CERAMIC 68PF K<br>ELECTR0 4.7UF 25WV<br>ELECTR0 0.15UF 50WV<br>ELECTR0 0.12UF 50WV       |                        |                    |
| C231                                                |               |                   | CE04W1HR1M                                                               | ELECTR0 0.1UF 50WV                                                                                        |                        |                    |
| VR201-212                                           | 1A, 2C        | *                 | R13-5054-08                                                              | POTENTIOMETER (100K) EQ (WITH LED)                                                                        |                        |                    |
| IC201<br>IC202-205<br>IC206<br>IC207                |               | *                 | NJM4559D-D<br>NJM4558-DX<br>NJM4559D-D<br>NJM4558-DX                     | IC 0P AMP<br>IC 0P AMP<br>IC 0P AMP<br>IC 0P AMP                                                          |                        |                    |
| SPECTRUM ANALYZER (W02-0613-08)                     |               |                   |                                                                          |                                                                                                           |                        |                    |
| FL1                                                 | 1B            | *                 | B31-0331-08                                                              | FLUORESCENT DISPLAY (SPECTRUM)                                                                            |                        |                    |
| C1 -5<br>C6 ,7<br>C8 ,9<br>C10 ,11<br>C12 ,13       |               |                   | CE04W1C100M<br>CE04W1HR47M<br>CE04W1HR33M<br>CE04W1HR22M<br>CQ92M1H823K  | ELECTR0 10UF 16WV<br>ELECTR0 0.47UF 50WV<br>ELECTR0 0.33UF 50WV<br>ELECTR0 0.22UF 50WV<br>MYLAR 0.082UF K |                        |                    |
| C14 ,15<br>C16 ,17<br>C18 ,19<br>C20 ,21<br>C22 ,23 |               |                   | CQ92M1H393K<br>CQ92M1H223K<br>CQ92M1H822K<br>CQ92M1H332K<br>CQ92M1H272K  | MYLAR 0.039UF K<br>MYLAR 0.022UF K<br>MYLAR 8200PF K<br>MYLAR 0.0033UF K<br>MYLAR 0.0027UF K              |                        |                    |

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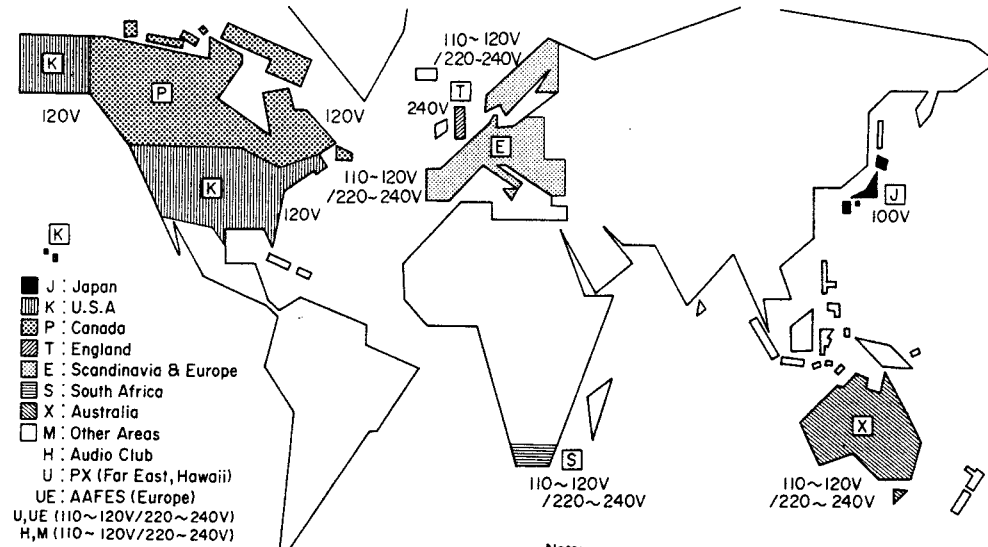
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| C24 ,25<br>C26 ,27<br>C28 ,29<br>C30 -42<br>C43 |               |                   | C092M1H122K<br>C092M1H681K<br>* C91-0772-08<br>CE04W1C100M<br>CK45F1H473K | MYLAR 1200PF K<br>MYLAR 680PF K<br>POLYPR0 220PF K<br>ELECTR0 10UF 16WV<br>CERAMIC 0.047UF K |                        |                    |
| C44 ,45<br>C46<br>C47<br>C48                    |               |                   | C092M1H682K<br>CC45SL101K<br>CE04W1E100M<br>CK45F1H473K                   | MYLAR 0.0068UF K<br>CERAMIC 0.0068UF<br>ELECTR0 10UF 25WV<br>CERAMIC 0.047UF K               |                        |                    |
| 80                                              | 1B            | *                 | G13-0168-08                                                               | CUSHION (BEHIND FL1)                                                                         |                        |                    |
| RA11P<br>RA12P<br>VR1                           |               | *                 | R90-0428-08<br>* R90-0427-08<br>* R13-5053-08                             | MULTI-COMP 10KX11<br>MULTI-COMP 10KX12<br>POTENTIOMETER(100KB)LEVEL                          |                        |                    |
| S13 ,14                                         | 1B            | *                 | S40-1091-08                                                               | PUSH SWITCH(1KEY)LEFT,RIGHT                                                                  |                        |                    |
| D1 -27<br>IC1 ,2<br>IC3 -5<br>IC6<br>IC7        |               | *                 | 1S1588<br>* NJM4558-DX<br>* NJM2058D<br>* HD14520BP<br>* HD14514BP        | DIODE<br>IC 0P AMP<br>IC 0P AMP<br>IC DUAL BINARY UP COUNTER<br>IC 4-16 LINE DECODER         |                        |                    |
| IC8 -13<br>O1 ,2<br>Q3 -15                      |               | *                 | LM339N<br>2SA1048(GR)<br>* 2SC2062B                                       | IC QUAD COMPARATORS<br>TRANSISTOR<br>TRANSISTOR                                              |                        |                    |

## WORLD MAP &amp; AREA CORD



## Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

## TRIO-KENWOOD CORPORATION

Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

## KENWOOD ELECTRONICS

1315 E. Watsoncenter Rd. Carson, California 90745, U.S.A.

75 Seaview Drive, Secaucus, New Jersey 07094, U.S.A.

## TRIO-KENWOOD CANADA INC.

1070 Jayson Court, Mississauga, Ontario, Canada L4W 2V5

## TRIO-KENWOOD ELECTRONICS, N.V.

Leuvensesteenweg 504 B-1930 Zaventem, Belgium

## TRIO-KENWOOD ELECTRONICS GmbH

Rudolf-Brass-Str. 20 6056 Heusenstamm, West Germany

## TRIO-KENWOOD FRANCE S.A.

5, Boulevard Ney, 75018 Paris, France

## TRIO-KENWOOD (AUSTRALIA) PTY. LTD. (INCORPORATED IN N.S.W.)

4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

## KENWOOD &amp; LEE ELECTRONICS, LTD.

Wang Kee Building, 5th Floor, 34/37, Connaught Road, Central, Hong Kong

E: Scandinavia & Europe H: Audio Club K: USA P: Canada

S: South Africa T: England U: PX(Far East, Hawaii)

UE: AAFES(Europe) X: Australia M: Other Areas

△ indicates safety critical components.